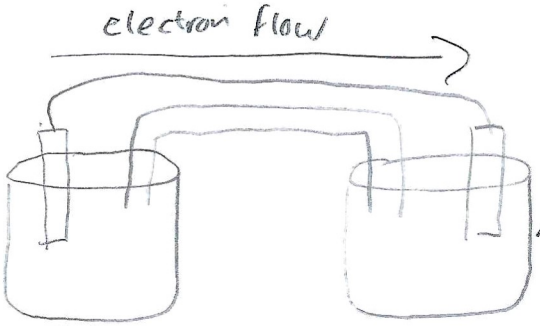
Test #9

1. Na: +1 ✓
   C: -2 ✓
   O: +4 ✓

2. it was reduced ✓

3. The oxidizing agent is Mn ✓ and the reducing agent is Au ✓

4. it cannot be a Galvanic cells because they only have Positive Voltage ✓

5. 

✓

$Cr \rightarrow Cr^{3+} + 3e^-$ $Fe^{2+} + 2e^- \rightarrow Fe$

0.74 volts ✓ + -0.440 volts ✓

Cell Potential = 0.30 volts ✓

17/18

94%

6. 1.66 volts + 1.3595 volts = 3.02 volts ✓

Reaction

$2(Al \rightarrow Al^{3+} + 3e^-)$

$+ 3(Cl_2 + 2e^- \rightarrow 2Cl^-)$

$2Al + 3Cl_2 \rightarrow 2Al^{3+} + 6Cl^-$ ✓

7. $Co \mid Co^{2+}(1M) \parallel O_2(1atm) \mid H_3O^+(1M) \mid Pt$ ✓

8. $2(Al \rightarrow Al^{3+} + 3e^-)$

$+ 3(Cu^{2+} + 2e^- \rightarrow Cu)$

$2Al + 3Cu^{2+} \rightarrow Al^{+3} + 3Cu$ ✓

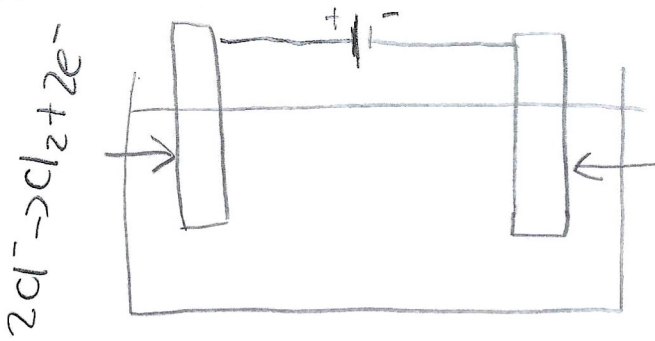
Standard Potential: 1.66 volts −1

$$E_{cell} = 2.00 \text{ volts} - \left(\frac{0.05916}{6}\right)\left(\log\left(\frac{(0.350)^2}{(0.0500)^3}\right)\right)$$

$$= 2.00 - \left(\frac{0.05916}{6}\right)(2.941)$$

$$= 2.00 - 0.029493 = 1.97 \text{ volts}$$ ✓

9.



✓

10. $\left(15.0 \frac{C}{sec}\right)(18000 \text{ sec}) = 270000 = 2.70 \times 10^5 C$ ✓

$(2.70 \times 10^5 C)\left(\frac{1 \text{ mole of } e^-}{96485 C}\right) = 2.80 \text{ moles of } e^-$ ✓

$(2.80 \text{ moles of } e^-)\left(\frac{1 \text{ mole of Mn}}{2 \text{ moles of } e^-}\right) = 1.40 \text{ moles of Mn}$ ✓

$(1.40 \text{ moles of Mn})\left(\frac{54.9 \text{ g of Mn}}{1 \text{ mole of Mn}}\right) = 76.9 \text{ g of Mn}$ ✓